

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Meeting/workshop of Air Traffic Management (ATM) Authorities and Planners
(Lima, Peru, 18 to 21 July 2000)

Agenda Item 2: Requirements which should be fulfilled for the trials and demonstrations in temporal RNAV routes between Santiago-Lima/Miami and Sao Paulo-Rio de Janeiro/Miami

(Presented by the Secretariat)

Summary

This working paper provides information on the minimum requirements for setting up RNAV route trials and demonstrations. The meeting is invited to review and/or modify the minimum requirements for performing these trials and demonstrations and to review and/or update the status of ATS speech circuits between the ACCs affected by the two RNAV routes to be established (Santiago/Lima-Miami and Sao Paulo/Rio de Janeiro-Miami).

1. Introduction

1.1 The second meeting of the CNS/ATM/IC Subgroup, held in Havana, Cuba on 11-15 August 1997, agreed in Decision 2/5 that it would be highly advantageous for CAR/SAM States to set up a series of long-range trial and demonstration RNAV routes (great circle) linking city pairs. The establishment of these routes would allow for early implementation of some CNS/ATM elements in both regions and would also give users the possibility to use already installed avionics, thus generating substantial flight time and fuel savings between the selected city pairs.

1.2 The GREPECAS/7 meeting (Lima, October 1997) noted this initiative of the CNS/ATM/IC Subgroup and agreed to the conduction of these trials and demonstrations. Subsequent meetings of the CNS/ATM/IC Subgroup made some modifications in the trial and demonstration programme, with the result that trials will begin in the Santiago/Lima-Miami and Sao Paulo/Rio de Janeiro-Miami routes.

2. Discussion

Minimum requirements for the trials and demonstrations

2.1 The CNS/ATM/IC Subgroup, at its second meeting (1997), considered that the following requirements should be met in the trial and demonstration routes:

- a. aircraft using these routes should carry RNAV equipment;
- b. the minimum utilisation level would be FL 310;
- c. a minimum longitudinal separation of 10 minutes would be used for aircraft flying at the same level, with the assurance provided by the Mach number technique (MNT); and
- d. an RNP value suitable for route confinement would be assigned, to be determined at a later time.

2.2 Some of the requirements initially identified by the CNS/ATM/IC Subgroup have been updated based on the results of the CAR/SAM/3 RAN meeting regarding RNAV routes, RNP, and planning shown in the ATM Evolution Tables of the CAR/SAM ANP FASID.

2.3 Requirements a) and b) remain unchanged; in requirement c), the use of an 80-nautical mile (NM) RNAV separation is added to the 10-minute longitudinal separation, both supported by the Mach number technique (MNT); and as to requirement d) the use of the RNP value to be selected for these trial and demonstration routes shall be deferred until later trials take place, inasmuch as airspace safety assessment must be conducted before applying RNP values for the CAR/SAM regions, such as, for example, RNP 10 as indicated in the ATM Evolution Tables of the CAR/SAM FASID for these flows (see CAR/SAM/3 RAN Rec. 5/22, Conc. 5/23, and Rec. 5/24).

2.4 Chapter 6 and Appendix C of the Required Navigation Performance (RNP) Manual, Doc. 9613, contain detailed explanations of the on-board equipment aircraft should carry in order to be able to engage in RNAV navigation. Regarding the 10-minute/80 NM RNAV longitudinal separations, Doc. 4444, Part III, Sections 8.4 and 8.5, provide the necessary information for applying these separations. Guidance material for applying the Mach Number Technique can be found in the Air Traffic Planning Manual, Doc. 9426, Part II, Sec. 2, Ch. 2. A copy of the aforementioned references is shown in Appendices C, D, and E to this working paper.

2.5 Based on the foregoing, the Meeting is expected to discuss the minimum requirements for conducting the trials and demonstrations and modifying them as necessary, considering the needs of the States affected and of the users taking part in these trials.

Status of coordinations among the ACCs involved

2.6 Satisfactory ATS voice communication between the ACCs responsible for the FIRs in which the RNAV routes will be established is extremely important to the RNAV route trials and demonstrations to be performed in the two selected flows.

2.7 The Secretariat is aware that the ATS speech circuits of ACCs in the CAR Region have improved enormously in the last two years, resulting in highly reliable communications among the ATS units of the CAR Region that are connected to the MEVA network. ATS speech communication in the SAM Region has also improved considerably over the last two years, although there are still some sectors where communications could be considered acceptable, although not totally satisfactory.

2.8 **Appendix B** to this working paper contains two tables showing the status of ATS speech circuits in the ACCs through which these RNAV routes will pass, for review and updating, if necessary, by the meeting.

3. **Suggested action**

3.1 The Meeting is invited to:

- a) take note of the information provided by the Secretariat concerning the minimum requirements for carrying out RNAV route trials and demonstrations;
- b) review and/or modify, if necessary, the minimum requirements for carrying out these trials and demonstrations; and
- c) review and/or update the status of ATS speech circuits between the ACCs affected by the two RNAV routes to be established (Santiago/Lima-Miami and Sao Paulo/Rio de Janeiro-Miami).

Appendix A

Copy of the map shown in Appendix C to the report on agenda item 4 of the CNS/ATM/IC/2 meeting.

Appendix B**Status of ATS speech circuits between the ACCs affected by the establishment of the Santiago/Lima-Miami and Sao Paulo/Rio de Janeiro-Miami RNAV routes****Santiago/Lima-Miami route**

<i>ATS speech circuit</i>	<i>Status</i>	<i>Remarks</i>
Miami ACC- Havana ACC	Satisfactory	
Havana ACC- Kingston ACC	Satisfactory	
Kingston ACC-Panama ACC	Satisfactory	
Panama ACC- Bogota ACC	Satisfactory	
Bogota ACC- Guayaquil ACC	Acceptable	
Guayaquil ACC-Lima ACC	Acceptable	
Lima ACC- Santiago ACC	Satisfactory	

B2

Sao Paulo/Rio de Janeiro-Miami route

<i>ATS speech circuit</i>	<i>Status</i>	<i>Remarks</i>
Miami ACC - Havana ACC	Satisfactory	
Havana ACC - Kingston ACC	Satisfactory	
Kingston ACC- Curaçao ACC	Satisfactory	
Curaçao ACC- Maiquetia ACC	Satisfactory	
Maiquetia ACC- Manaus ACC	Satisfactory	
Manaus ACC-Brasilia ACC	Satisfactory	

Appendix C

Doc 9613, Appendix C Ch. 6

Appendix D

Doc 4444 part
iii sections 8.4 y 8.5

Appendix E

Doc 9426, Parte II, Sec 2. Cap. 2